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ABSTRACT

This document presents a taxonomy for classification of classroom observational data. Information for the study was accumulated in successive classes at the School of the Institute of Education, University of Helsinki and processed statistically. The taxonomy was developed through both empirical procedures and logic and concept analysis. Part one describes the purpose and function of the DPA Helsinki Taxonomy. Part two discusses the general principles behind the study, defines terminology, and describes several main taxonomical principles. Part three focuses on unit coding from several viewpoints: (a) move types (units representing verbal interaction during the instructional process), (b) cognitive content of the move; (c) social affective properties of the move, and (d) modes of teacher influence. Part four discusses periodic coding (i.e., coding of sequences of instructional situations devoted to the same task) in terms of division of labor and responsibility in the classroom, formal characteristics of verbal communication, and goal-related behavior. Part five offers reliability data. (A list of references is included.) (JS)

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No. 42

November 1974

DPA HELSINKI SYSTEM FOR DESCRIBING INSTRUCTIONAL PROCESSES

Manual

Prepared and edited on behalf
of the Research Team DPA Helsinki
by
Matti Koskenniemi, Kai Karma and
Marja Martikainen

SP 129 123

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M A N U A L

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Institute of Education
University of Helsinki
1974

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F o r e w o r d

This manual has developed in the course of investigations carried out by the research team DPA Helsinki in the years 1967-73. A taxonomy for classification of observational data, i.e., an instrument with which to describe the interaction in instructional situations, is a prerequisite for successful penetration of the structure and dynamics of instructional processes, which is what our research team has set out to do.

The aims and design of the DPA Helsinki Project, as well as reasons for and ways of constructing a new taxonomy have been reported elsewhere (Koskenniemi & Komulainen 1974). It may suffice to mention that, in our view, other taxonomies available at present are restricted in the sense that they cannot be applied to all kinds of instructional situations and they do not take all aspects of behavior assumed to be relevant to the process proper into consideration.

The material used in the construction of the DPA Helsinki taxonomy was mainly accumulated in successive classes at the School of the Institute of Education, University of Helsinki. The data were processed statistically as described by Erkki Komulainen (op.cit., pp. 5-19). It was not possible, however, to accomplish the task of composing this taxonomy by using empirical and statistical procedures only. The task is lastly one of logic and concept analysis.

At present our research team consists of the following persons: Matti Koskenniemi, Erkki Komulainen, Pentti Holopainen, Kai Karma, Marja Martikainen, Eeva Hietala, Pertti Kansanen, Kari Uusikylä, Timo-Pekka Asikainen and Mikko Iskala. The team members - some from the first beginning,

others joined us later - have taken part in collecting and processing data needed for the construction of this manual. The detailed preparation and completion of the manual were entrusted to the editors.

Translating the original manual from Finnish has not been an easy task, owing to differences in terminology and didactical tradition. As it has not been possible to present examples of coding and other useful details in this edition, it is a manual only in a narrow sense of the word.

The DPA Helsinki team is indebted to the Nordic Cultural Foundation, The Academy of Finland, The University of Helsinki, and the National Board of Schools in Finland for financial support. Cooperation with former and present teachers and pupils at the School of the Institute has been indispensable to the project. The DPA Helsinki team expresses its sincerest gratitude to all these institutions and persons.

Editors

DPA HELSINKI SYSTEM FOR DESCRIPTION OF INSTRUCTIONAL PROCESSES
M A N U A L

1. Purpose of the DPA Helsinki Taxonomy

In order to describe the appropriateness of a certain period of an instructional process in terms of goals set down previously, and to guide student teachers into effective leadership of that process, knowledge of what is essential within the instructional process, central and universally occurring as to structure, content and sequence of this process, is inevitably needed. Moreover, evaluation of a single period or chain of periods of instruction should be based on essential characteristics of the process observed. This is as important a prerequisite for successful evaluation as knowledge of goals set and their acceptance, knowledge of qualities of the teacher, and of pupils both as individuals and a group.

Reliable description of instructional processes presupposes a taxonomy within which the primary data concerning various aspects of the process can be incorporated into a systematic and logical whole. Subjective appraisals and application of different concepts on the same phenomena can be avoided by using a taxonomical system. Moreover, different descriptions of instructional processes will in this way be commensurable.

2. The DPA Helsinki Taxonomy: General Principles

2.1. Some Definitions

Our taxonomy is determined by the definition adapted for the concept of instruction. Instruction is seen as a mainly interactive process within school life, aiming at the development of the pupil's personality in accordance with educational objectives. The aims of school learning, derived from these objectives, are to be accepted by and internalized in at least most of the members of the class community. This presupposes a certain number of joint decisions regarding the work to be done in the next days or weeks. Consequently, our concept of the instructional process includes phases both preceding and following the interactive situations proper.

Planning done by the teacher alone is in the DPA Helsinki Project coined as the preinteractive phase of instruction. It is followed by joint planning which falls within the frame of the interactive phase proper, as does also joint evaluation. Evaluation conducted by the teacher alone is, again, defined as the postinteractive phase of instruction. The DPA Helsinki Taxonomy is intended for describing the interactive phase of instruction, from planning to evaluation.

Instruction, especially during its interactive phases, consists of various instructional situations following or running alongside each other. These situations, presenting smaller temporal sections of a longer instructional period, are distinguishable from each other by the way instructional activities are arranged or take place, by grouping of pupils and by the division of responsibility between teacher and pupils.

2.2. Main Taxonomical Principles

Instructional periods (usually equivalent to lessons), i.e., temporarily limited, continuous sequences of instructional situations, are by this taxonomy described as processes within a frame of certain areas, each comprising several subareas. These main areas, eight in number, assumed or empirically found to be relatively separated from each other, are listed on pp. 4 and 5.

Descriptions are built up in the following way. - Temporal units are first assorted from the flow of the videotaped instructional process and classified (unit coding). - This coding is carried out chiefly on the basis of verbal behavior. (Some exceptions will be mentioned later.) The systems of Bellack, Bales, and Flanders have been applied in so far as they complement each other and help to build up a logical whole. The DPA Helsinki taxonomy is based on the notion that interactive characteristics of the instructional processes are, in most cases, completely enough determined by verbal communication which, moreover, is the easiest to observe and classify.

Basic temporal units in our taxonomy are with slight modifications identical with the pedagogical moves in Bellack's system (STR, SOL, RES, REA, IRR, SIL). They are seen as natural units representing didactical functions on the tactical level. Units of this kind are preferred to artificially limited units based on time-sampling procedure.

The smallest temporal units, the moves (I), are further classified on the unit level with regard to (II) the cognitive content of the move (FAC, XPL, OPN, PER, MAN; modified Bellack categories), (III) its social-affective characteristics (modified categories of the Bales' system), and (IV) modes of teacher influence appearing in it (some of Flanders' categories). See the overview on p. 6.

An instructional period is, however, as a process more than the sum of the units of which it consists. It has holistic qualities (e.g., a certain emotional climate) or structural properties which can be described only by combining data from unit codings or by viewing the temporal chain of situations as a whole from its beginning to its end. Description of whole periods of instruction is therefore in some cases built on the basis of unit classification by using combined indices, in some cases on the basis of ratings or other classifications relating to the period as such, and sometimes on the basis of both.

The period coding consists, first, of two basic classifications concerning the didactical structure:

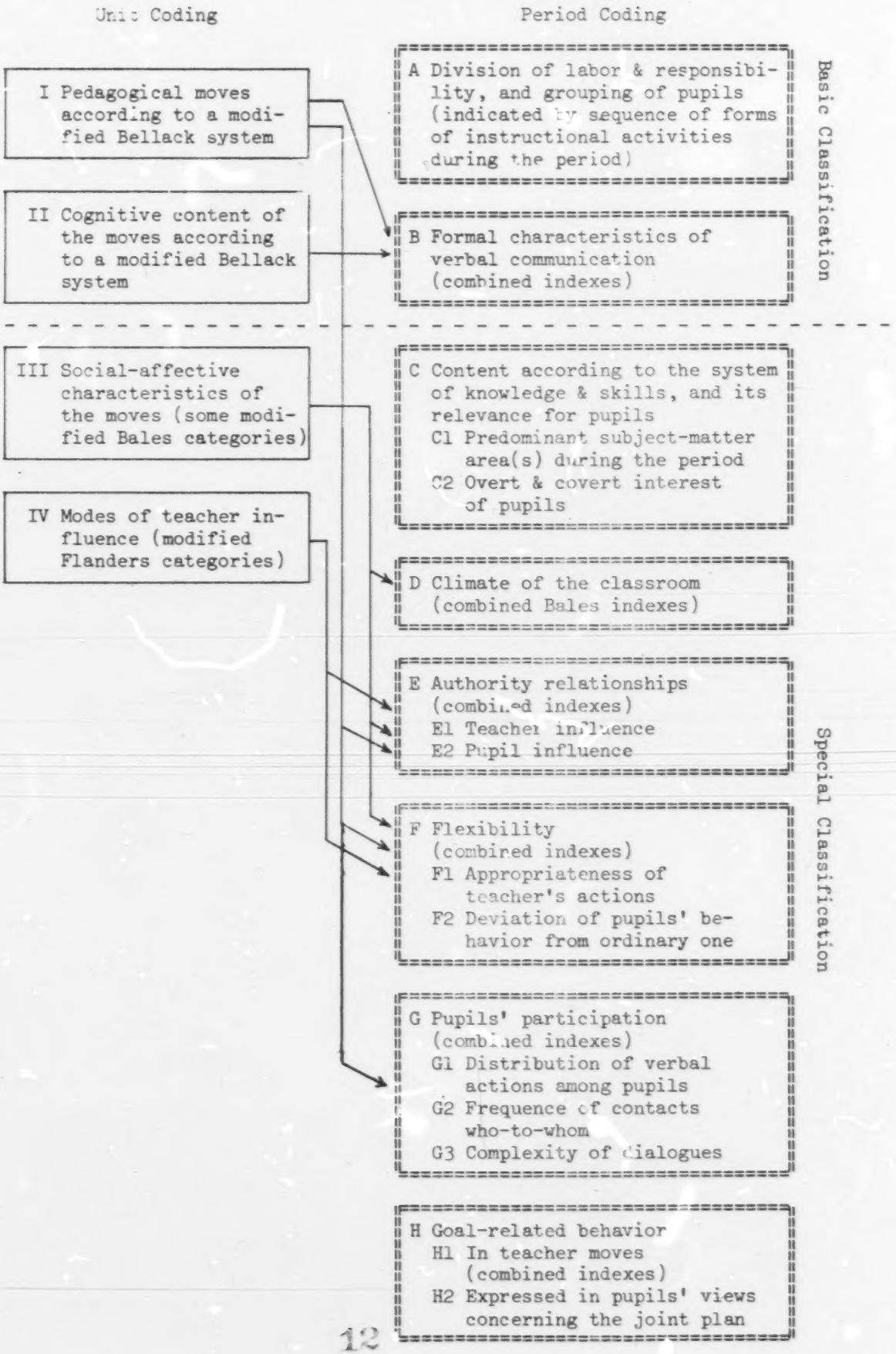
(A) Division of labor and responsibility, and grouping of pupils expressed through the forms of classroom activities and their sequence.
(B) Formal characteristics of verbal communication.

In addition period coding comprises descriptions within the following areas:

(C) Content expressed by the subject matter characteristics of the lesson, and their relevance for pupils.
(D) Class climate operationalized by some combined Bales' indices.
(E) Authority relationships which are expressed by Flanders' I/D-ratios based on unit codings referring to modes of teacher behavior and, as to pupils, by some indices concerning pupil moves and affective meanings of these moves.
(F) Teacher flexibility which is operationalized by the share of his actions appropriate to the situation at hand.
(G) Pupils' participation which is operationalized by the distribution of verbal actions among pupils in the class, and counting various combinations of teacher and pupil moves within the classroom dialogue.

(H) Goal-related behavior which is operationalized by questionnaire data expressing to what extent the pupils have taken the plans into consideration or other goals for the period.

DPA HELSINKI TAXONOMY: AN OVERVIEW


Unit Coding
Period Coding
I Pedagogical moves according to a modified Bellack system
II Cognitive content of the moves according to a modified Bellack system
III Social-affective characteristics of the moves (some modified Bales categories)
IV Modes of teacher influence (modified Flanders categories)
A Division of labor & responsibility, and grouping of pupils (indicated by sequence of forms of instructional activities during the period)
B Formal characteristics of verbal communication (combined indexes)
C Content according to the system of knowledge & skills, and its relevance for pupils
C1 Predominant subject-matter area(s) during the period
C2 Overt & covert interest of pupils
D Climate of the classroom (combined Bales indexes)
E Authority relationships (combined indexes)
E1 Teacher influence
E2 Pupil influence
F Flexibility (combined indexes)
F1 Appropriateness of teacher's actions
F2 Deviation of pupils' behavior from ordinary one
G Pupils' participation (combined indexes)
G1 Distribution of verbal actions among pupils
G2 Frequence of contacts who-to-whom
G3 Complexity of dialogues
H Goal-related behavior
H1 In teacher moves (combined indexes)
H2 Expressed in pupils' views concerning the joint plan
Basic Classification
Special Classification

3. Unit Coding

3.1. Introduction

Properties of the moves, the units representing verbal interaction during the instructional process, are examined parallelly from the following viewpoints:

I Type of the move according to a modified Bellack system.
II Cognitive content of the move (categories referring to substantive-logical and instructional meanings, modified categories from the system of Bellack).
III Social-affective properties of the move (categories within the affective domain, modified categories from the Bales system).
IV Modes of teacher influence (modified categories from the Flanders system).

In the construction of this taxonomy special attention was paid to keeping separate properties apart in order to make it possible to leave out one category without changing the others. Technical connections between categories were removed as far as possible, so that data obtained are better suitable for statistical analyses. Minimized technical connections also make it possible to leave out categories which are not particularly needed in description of certain instructional processes.

The DPA Helsinki taxonomy is comparatively detailed. Coding must therefore be performed by using tape recordings. On the other hand, direct observations to obtain a view of the process as a whole can and should be done simultaneously with taping.

3.2. Move Types (I)

3.2.1. Moves

Moves - questions, answers, reactions, etc., - are treated as basic units within the instructional process and are not further divided. A move is classified in its various aspects, i.e., it is also given codes with regard to dimensions II, III, and IV when corresponding meanings are considered to be present. If a move appears to have more than one meaning within any of dimensions II, III, IV, only the most essential is chosen (cf. detailed instructions below).

A move type is a symbol for the functional meaning of the language. The content of the move has to be taken into consideration in marginal cases only. Accordingly a move gives information on how the unit of interaction in question is attached to the didactical situation in which it appears. A move can be

- an independent unit not necessarily implying intention to bring out immediate consequences, a unit which is not as such a direct outcome of something that happened previously (STR),
- an attempt to bring about certain activity in other members of the interaction (various SOL moves),
- an answer to a question presented (RES),
- a statement which otherwise is closely attached to a previous one (REA);

In addition a move can in some cases be classified as IRR or SIL (see below).

All verbal interaction is, in principle, described through move types. The only exceptions are statements which owing to technical difficulties or which for other reasons remain unintelligible, and, further, expressions uttered by a single pupil himself or between pupils which have no importance when they are viewed from the standpoint of the

whole. Such statements can happen to be taped in the immediate vicinity of a microphone.

A move ends and another begins when the function of a statement changes from one category to another.

1) In a Structuring move (STR) the speaker presents facts, opinions or viewpoints. Summaries, answers to one's own questions, and statements intended to prepare new areas of dialogue are also classified as STR.

A STR move does not necessarily have to be preceded by a statement, the direct consequence of which it would be, although it is often a logical continuation of the topic handled before. STR and REA moves are differentiated according to the following criterion: The move is coded REA when its connection with the preceding statement is so close that it can be considered a comment, an explanation, a background fact or supplement to something handled before, i.e., it would not have been presented at all unless the previous topic had been presented.

If, on the other hand, the topic is principally a new one which the preceding statement brought into the mind of the speaker and which could have been presented even without this stimulus, the move is coded as STR.

Facts and opinions are sometimes presented in question form ("Isn't it so?"). In such cases the coder must conclude which meaning, STR or SOL, is the primary one.

2) Soliciting moves (SOL) are intended to call forth verbal or non-verbal behavior of another person using a question, solicitation or order. The following subcategories of SOL can be distinguished:

- SOL_i is a question to which an answer on fact level is expected; SOL_i can also appear as a solicitation,
- SOL_h is a move which calls for an answer containing

some form of logical operation on higher cognitive level,

- SOL_o is a move containing an instruction how to act, also guidance to behave according to behavioral rules,
- SOL_s is a move containing a request for suggestion,
- SOL_d is a move containing a request for guidance.

3) A Responding move (RES) is an answer, the anticipated response to a SOL move and it can appear in connection with SOL moves only. Non-verbal answers (e.g., on the blackboard) are also coded as RES. All responses to SOL moves are, however, not to be coded as RES. SOL can also be connected with REA moves, for instance.

4) A Reacting move (REA) follows a preceding move (sometimes also some physical activity), commenting on it, adding something to it, modifying it, expressing the speaker's view of the topic or revealing that he has/has not understood/heard it. How to distinguish STR and REA from each see point 1.

Sometimes long statements appear which clearly begin as REA but continue with expressions which could just as well be spontaneous, independent of preceding move. In such cases the former part should be coded as REA, the latter as STR, provided that the description of the process does not get distorted.

When a pupil is not able to continue his answer and the teacher tries to help him to proceed, it is sometimes difficult to decide between SOL and REA. It is recommended that REA is used when the teacher repeats something said by the pupil and SOL_o when the teacher shows how the answer should be continued.

5) An Irrelevant move (IRR) is a statement which according to its content or tone seems to try to disturb instruction. If such a statement is obviously unintentionally irrele-

vant, i.e., inadequate, it is coded using categories whose functions and contents the speaker seems to refer to (e.g., answers with wrong facts are coded as RES/FAC).

6) Silence move (SIL) is used as a category when the work is non-verbal. If there is reason to suppose that the teacher is using silence to create disciplined behavior, the coding is T/SOL_o/MAN.

Moves are numbered in order of occurrence (cf. Appendix).

3.2.2. Cycles

A cycle is a whole within which the moves are more closely connected with each other than with the moves outside this whole, e.g., a question and the answer following it, a statement and the reaction it has produced. A cycle can be composed of one or several moves. The principal rule applied when defining cycles is that a cycle begins with a STR move, or with a SOL move without a preceding STR, and ends when the next cycle begins.

For example, the row consisting of the moves

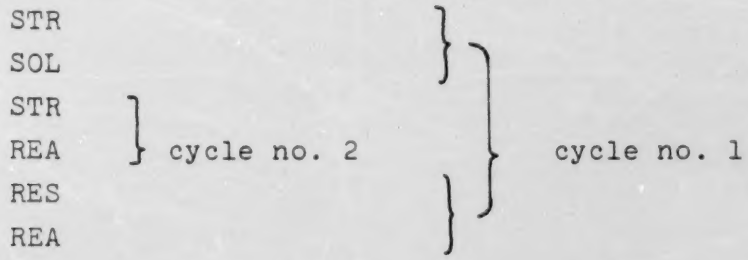
STR REA STR SOL RES SOL RES REA STR SOL RES REA

is divided into cycles as follows:

/STR REA /STR SOL RES /SOL RES REA /STR SOL RES REA /

According to this rule successive STR or SOL moves are placed in different cycles. Exception: Successive SOL moves can be included in the same cycle if they clearly belong to the same context, e.g. when the same question is put in different ways. If the teacher does not get an answer he usually repeats the question in a more concrete form or tries to guide pupil towards the right answer (SOL_h SOL_i RES). These moves are included in the same cycle. A SOL_o move which also can be comprehended as a reaction to the preceding statement is likewise included in the same cycle (e.g., SOL_d SOL_o).

A cycle is not necessarily composed of moves following one after the other. On the contrary, the functional connection between moves should be regarded as the essential criterion. The row of the moves STR SOL STR REA RES REA is really composed of two cycles, one within the other, because something interfered between the question and the answer. The cycles are consequently as follows:



In case elucidation of the preceding statement is requested this request and the explanation following it are included in the same cycle. The teacher is regarded as reacting to pupil's structuring, not to his answer.

A move is sometimes intercepted and continued later. This kind of sequel is marked with subindex m and its content is not coded. The sequel belongs to the same cycle as the first part of the move, irrespective of how far apart it is situated. Note: If such a sequel has a content clearly different from the first part, it is coded according to its content.

IRR and SIL form separate cycles in most cases. If they are firmly and clearly connected with a statement appearing before or after they can, however, be included in the cycle to which they logically belong. Such are for instance cases in which silent work begins with a teacher's SOL_o move (SOL_o SIL), or IRR combined with a reaction towards it (IRR REA).

Cycles are numbered in order of occurrence.

3.3. Cognitive Content of the Move (II)

When the cognitive content of a move is coded, the matter that is dealt with and the form in which this is carried out are used as criteria. The coding of the content is performed independently of the move type and of the social-affective tone of the move. Cognitive content is not coded on all moves (cf. instructions below). The categories of cognitive content are MAN, PER, FAC, OPN, and XPL.

1) Management (MAN) refers to the acts which are connected with the flow of the instructional process, except those relating to contents of learning, such as disciplinary matters, handling of furniture and learning materials, and, further, those dealing with the formal properties of the subject matter (not with its content), e.g., length of tasks, order of performance, etc.

2) Person (PER) is used as a code when matters connected with the backgroud experience of the persons taking part in the interaction are dealt with.

3) Fact-Stating (FAC) refers to pure presentation of facts. Reading from a textbook is always coded as FAC.

4. Opinion (OPN) is used when the speaker gives his own opinion or justifies it.

5. Explaining (XPL) is coded when causes and consequences are discussed. XPL is also used when some matter is defined by presenting its essential properties, connections or differences within it (connotative definition).

If the essential properties or differences have already been revealed in the question and only the name of the phenomenon (phenomena) is asked for, the answer is regarded to presuppose a simpler logical operation and is consequently coded as FAC (denotative definition).

When a move contains equal components of contents which can be coded as FAC, OPN or XPL, on the other hand, and contents to be coded as MAN or PER, on the other, MAN or PER are given priority.

In case a move contains contents to be coded as FAC, on the other hand, and, on the other, contents which can be coded as OPN or XPL, the move is coded as OPN or XPL.

Cognitive content is not coded in the following cases:

a) in connection with SOL moves; exception: when a SOL_o move is followed by a non-verbal MAN (which is not ordinarily coded) this is coded in connection with the SOL_o;

b) in connection with a reaction where the cognitive contents only repeat what was said in the preceding statement, or when the reaction only contains information as to the correctness/incorrectness of the statement;

c) when the move has a content of social-affective nature only.

3.4. Social-Affective Properties of the Move (III)

Social-affective properties of a move are coded when the content of the move or the way in which the move is expressed are connected with some kind of emotional expression.

A positive emotional state is referred to by categories 1 to 3 (from the strongest to the weakest), a negative state by categories 6 to 8 (from the weakest to the strongest). When uncertainty as to grading arises, the strongest alternative is used in coding.

Moves in which the correctness of a preceding statement is evaluated are also coded within the social-affective area (acceptance, category 4 and rejection, category 5). If a move, besides this, also reveals affective properties it coded accordingly.

Category 1: Shows solidarity, raises other's status, gives reward.

Category 2: Shows tension release, satisfaction, jokes, laughs.

Category 3: Agrees, understands, complies.

Category 4: Agreement connected with the correctness of a preceding statement, short repeatings. Note: A reaction "Right!" can be classified as category 1, 3 or 4 depending on the emphasis used or the situation at hand. The coder should imagine himself as a member of the group and decide on social-affective properties of the statement according to how he thinks pupils are experiencing the situation.

Category 5: Criticism connected with the correctness of a preceding statement (cf. category 4).

Category 6: Criticism connected with personal matters, disagreement.

Category 7: Shows tension, asks for help.

Category 8: Shows hostility, deflates other's status. Note: "Shut up!" can be classified as any of the categories 6 to 8. Coding depends on the emphasis and the situation.

3.5. Modes of Teacher Influence Expressed by the Move (IV)

The mode of teacher influence revealed in a move is coded either as 1) indirect or 2) direct. These properties are distinguished from each another by examining the amount of freedom given to the pupils by the teacher's statement. If it broadens the freedom of action the move is coded as 1, if this is restricted by the statement the code is 2.

1) The following verbal behaviors of the teacher are classified as indirect influence:

- Teacher accepts the emotional state of pupils.
- Teacher praises or encourages.

- Matter-of-fact criticism of the incorrectness of a statement is coded as 1, except in cases where it is connected with a strong negative emotional loading (e.g., "Wrong!"), when it is consequently classified as 2.
- Teacher makes use of pupil's thoughts, clarifies or develops them further.
- Teacher's questions to which various answers are possible, asking for opinions or arguments or proposals.
- Teacher's answer to questions presented by pupils in general (an exception, cf. below, last item).

2) As direct influence is classified:

- Teacher's questions to which pupils are supposed to answer in a previously fixed way.
- Teacher's questions concerning a matter already treated.
- Facts or opinions presented by the teacher.
- Teacher's criticism of pupil's behavior or other manifestations of authority.

3.6. Actor and Target of the Move

First the actor is checked move by move:

T (on the coding blank 1) teacher
P (" " 2) pupil, pupils

Actors and targets are further identified by name (attributing). This analysis of the interaction is, as far as possible, extended to the individual level in order to elucidate every pupil's behavior instead of regarding pupils as a group. The following codes are used:

t teacher
g group of pupils
x whole class
? missing information
initials (PM, VM, etc.) can be used for pupils' names and changed to number codes later on.

The pupil who answers is marked as the target of the teacher's question, also in cases when the question has been put to

the class as whole.

4. Periodic Coding

4.1. Introduction

Description of instructional processes is as a rule based on periods, i.e., sequences of instructional situations devoted to the same task. Periods are often interrupted by meals, breaks or recesses, etc. A chain of situations is nonetheless regarded as one period, if work at the same task or theme is continued after an intermission (e.g., handicraft may be interrupted by a short break).

The content of a period may vary and the period may be longer or shorter than an ordinary lesson. In most cases, however, a period is equivalent to a lesson. A period begins when a new task is taken up and ends with its completion. Consequently, both preparatory measures and final accomplishment of the task belong to the period.

According to the DPA Helsinki system a period is viewed and described as a whole. It is described through the eight describtive areas A to H mentioned in section 2.2. These descriptions are composed either of measures produced by unit coding, or of ratings of the periods as a whole, or by using both procedures.

Because unit coding is conducted on the basis of tapes, immediate ratings of the period as a whole can be carried out during the tape recording. These ratings can, and often should, be checked by replaying the tapes.

4.2. Area A: Division of Labor and Responsibility and Grouping of Pupils

The division of responsibility between teacher and pupils as well as the grouping of pupils are simply expressed by

indicating the form of classroom activity used. These forms are classified as follows:

- TC Teacher-Centered Activity Forms
  - -- TC_1 Teacher presentation (lecture, narrative, report with pupils as listeners; also radio, TV programmes, films, etc. can be used as modes of presentation).
  - -- TC_2 Teacher questioning with the class as target.
  - -- TC_3 Joint exercises with the same tasks simultaneously for all pupils.

- PC Pupil-Centered Activity Forms
  - -- PC_1 Individual work where every pupil studies on his own and the assignments are either self-chosen or adjusted to the individual pupil, and where teacher's activity is restricted to guidance and evaluation.
  - -- PC_2 Performances of individual pupils or groups of pupils aimed at other pupils, the teacher or some other audience.
  - -- PC_3 Group work where the task of the class is divided between groups, and the pupils take part both in planning and decisions concerning division of work; group accomplishments are presented to the class and discussed within it.

- CO Cooperative Activity Forms
  - -- CO_1 Instructional discussion in which the pupils and the teacher take part as equals setting the limits and handling of the theme.
  - -- CO_2 Assembly where joint topic and situational tone push pupil and teacher roles in the background.

Area A is described by reporting activity forms during the period in order of occurance, e.g., TC_1 - TC_3, or TC_2 - PC_3. If activity forms have been used simultaneously (e.g., most pupils have done individual work while the teacher has

checked the knowledge of some pupils by questioning them), this is marked TC_1 - PC_1 (TC_2).

Duration of activity is recorded with an accuracy of 5 minutes and coded with an upper index:

TC_1^{10} - PC_1^{35} (TC_2).

4.3. Area B: Formal Characteristics of the Verbal Communication

Description within this area is composed of data from unit coding as follows:

4.3.1. Move Types (I)

B 11 Percentage distribution of move types

B 12 Share of teacher moves of total number of moves $\frac{\text{T total}}{\text{T total + P total}}$

B 13 Spontaneity of pupils $\frac{\text{P STR + P SOL + P REA}}{\text{P total}}$

B 14 Average length of cycles expressed in numbers of moves

B 15 Variance of the average length of moves

B 16 Frequency of occurrence of moves (moves per minute)

4.3.2. Occurrence of Categories (II) and Their Quality

B 21 Percentage distribution of categories (II)

B 22 Share of personal experiences in pupils' communication: $\frac{\text{P PER}}{\text{P total cogn.}}$

B 23 Logical level of moves: $\frac{\text{XPL + OPN}}{\text{total cogn.}}$

B 24 Content-centeredness (separately for pupils, teacher, and both): $\frac{\text{FAC + XPL + OPN}}{\text{total cogn.}}$

B 25 Action-centeredness: $\frac{\text{MAN}}{\text{total cogn.}}$

4.4. Area C: Content According to the System of Knowledge and Skills, and Its Relevance for Pupils

The content is expressed by recording the subject matter area characteristics of the period. The following classification is used (examples mentioned refer to subjects common for all pupils):

- MC Subject matter planned for mastering symbols (i.e., means of communication) needed in interpersonal contacts; such contents appear mainly in language studies (forms and modes of expression).
- KR Subject matter planned to increase knowledge of environment; such contents appear mainly in social studies, civics, partly in religion, and in science and biology/geography.
- FS Subject matter for adopting formal systems required in mastering the environment; such contents appear mainly in mathematics but also partly in science and in systematic areas of biology/geography.
- VS Subject matter which promotes the adoption of religious, ethical, social and aesthetic value systems of the culture; such contents appear in some areas of religion, in social studies and civics, and in the arts.
- MS Subject matter promoting the acquirement of motor skills; such contents appear e.g., in handicrafts and home economics, civics, arts and in physical education.

In ambiguous cases the function of the contents in the instructional process is used as criterion. Reading aloud, for instance, can be intended to increase that particular skill (MC) or to communicate facts (KR or VS).

If subperiods whose contents differ from each other appear during the period, sequence is reported (e.g., MC - KR). If different categories appear simultaneously (i.e., the contents belong to different categories), this is marked by parentheses, e.g. KR (VS).

As in Area A, the duration of occurrence of certain contents categories is recorded with an accuracy of 5 minutes: MC^{30} - KR^{10}.

Attention of pupils during the period is used to measure the relevance of the contents for pupils and described by means of rating. This rating concerns the whole period and focuses on how many of the pupils by inference from verbal or other behavior (expressions, gestures, ways of working) may be considered to be attentive. The following classification is used:

4/4 practically all pupils attentive
3/4 of pupils attentive
2/4 - " -
1/4 - " -
0/4 practically no pupil attentive

If clear subperiods appear as regards the attendance of pupils, the ratings may be carried out separately for such subperiods (e.g. $3/4^{15}$ - $1/4^{30}$).

4.5. Area D: Emotional Climate of the Class

Describtion within this area is compiled on the basis of unit codings as follows:

- D 1 Percentage distribution of categories (III)
- D 2 Share of moves with social-affective properties of total number of moves: $\frac{1+2+3+6+7+8}{N \text{ of moves}}$
- D 3 Share of moves in the positive-emotional area out of total number of moves with social-affective properties (separately for pupils, the teacher, and both): $\frac{1+2+3}{1+2+3+6+7+8}$
- D 4 Share of feedback in the task area out of total number of teacher moves: $\frac{4+5}{N \text{ of T moves}}$

- D 5 Share of feedback in the task area out of total number of teacher moves with social-affective properties: $\frac{4+5}{1+2+3+4+5+6+7+8}$
- D 6 Share of tension release of moves connected with tension: $\frac{2}{2+7}$

4.6. Area E: Authority Relationships

E 1 Mode of Teacher Influence is expressed by I/I+D ratio which is counted as follows. Number of IV_1 codings within the period is divided by the sum of numbers of IV_1 and IV_2 codings. This ratio is a measure of the share of indirect teacher influence of the total amount of his influence.

E 2 Mode of Pupil Influence, whose description is relevant and possible mainly with regards to processes where group work is the typical activity, is expressed by:
- percentage distribution of pupil move types (I),
- percentage distribution of pupil moves (III) with affective meanings.

4.7. Area F: Flexibility

Description in this area is intended to give information about teacher behavior during a period in the dimensios: "taking the situation into consideration"---"rigidly schematic, stereotypical measures" when striving at the goals. Description of the degree of teacher's flexibility completes the description in Area E of his mode to use authority.

In the subjective rating applied to the period as a whole the rater is to decide how often the teacher behaves in a way appropriate to the situation and the goals (in most instances - now and then, but not continuously - hardly at all, in which case the teacher is striving at the goals in a rigidly schematic way without taking the situation into consideration).. Ratings are classified as VJ (very flexible), JJ (fairly flexible), VK (very schematic).

Note: The degree of flexibility in teacher's behavior can be verified in a more reliable way by comparing descriptions of periods following each other. E.g., percentage distributions of unit codings (separately in category groups I to IV can in this case be taken as a basis of comparison).

If description of several periods are available, it is possible to get information about the flexibility of pupils' behavior. In this case percentage distributions of unit codings in category groups I to III can be used as a basis of comparison.

4.8. Area G: Pupils' Participation

Description is composed of the following parts:

G 1 Distribution of Verbal Acts Among the Pupils during the period is rated by using the following classification:

HT very even
MT fairly even
ET very uneven

If the moves have been identified by name, i.e., the actor of every move is known, it is possible to count the deviation from an even distribution, which can then be used as a measure for unevenness of the distribution of verbal acts. E.g.: Pupil A has 4 acts and pupils B, C, D correspondingly 2, 3, and 1. The mean of acts (moves) per pupil is consequently 2.5. Deviations are: A 1.5, B 0.5, C 0.5, and D 1.5. The mean deviation is 1.0.

G 2 Description of Sequences of Teacher and Pupil Moves gives additional information as to the relative frequency and quality of teacher and pupil moves (cf. Area B, item B 12). Frequencies of various combinations (T-P, P-T, T-T, P-P) are easily counted. E.g., within chain

TTPTPPTTPTTPTPTPTPPPTTPPPTPTTPPP

the frequencies are as follows:

T-P 10
T-T 5
P-T 9
P-P 7,

the last one of which is usually symptomatic as regards the participation of pupils.

4.9. Area H: Goal-Related Behavior

If description is also needed of the amount of goal-related behavior during the period, i.e., the extent to which the pupils have had a notion of and have taken into consideration plans set earlier together with the teacher or (if no planning has been carried out) goals set for the period in one way or another (assignments given by teacher, textbook contents, etc.), such information is collected by means of a questionnaire, given to the pupils immediately after the period in question.

Pupils are asked to fill the following blank and instructed to tick off one square for each item. In the four lowest school grades pupils should perform this task with simultaneous instruction.

Every lesson has a plan which should be carried out, or an assignment that must be fulfilled. During the past lesson this plan or assignment was_____ (to be notified here).

1a. When the lesson began, this plan or assignment was at once	clear for me	partly clear for me	unclear for me
	☐	☐	☐
2a. This plan or assignment was in my opinion	very pleasant	pleasant	unpleasant
	☐	☐	☐
3a. When I worked during this lesson the plan or assignment	was in my mind all the time	was in my mind now and then	was in mind hardly at all
	☐	☐	☐

3b. As regards all pupils in the class, this plan or assignment	was in their mind all the time ☐	was in their mind now and then ☐	was in their minds hardly at all ☐
4a. When working according to the plan or at the assignment, I was	very diligent ☐	fairly diligent ☐	rather idle ☐
4b. All pupils in the class were, while working, in my opinion	very diligent ☐	fairly diligent ☐	rather idle ☐
5a. During the lesson I learnt what was intended to be learnt	well ☐	quite well ☐	badly ☐
5b. During the lesson the whole class learnt, in my opinion, what should have been learnt	well ☐	quite well ☐	badly ☐

The teacher also fills the blank (items 3b, 4b, 5b).

Answers are scored by using the scale 2-1-0. The following indices are calculated:

- sums of a-points by every item for individual pupils,
- mean of sums of b-points by every item for the class,
- corresponding mean for the teacher.

Note: If the period belongs to a longer chain of instructional periods, jointly planned by the teacher and pupils, and both planning and evaluative phases have been recorded, mean of ratings concerning the amount of goal-related behavior in the instances above can be used as a rough estimate of goal-related behavior throughout the whole period.

5. Some Reliability Data

Information on reliability on unit coding is available at present. Material collected for estimating reliability com-

prises codings of lessons on several subjects, conducted mainly in a traditional way (classroom instruction) in a 4th grade. Figures presented below are means of indices of agreement, on the one hand, between students of education, on the other, between these students and their instructors. Some categories are so rare in our material that their reliability could not be estimated for the present.

Figures are π-indices according to Scott but this index has been modified to make it possible to compute reliability values both for main and subcategories (Komulainen 1974). Figures are, as regards their properties, similar to correlation coefficients and can consequently be interpreted as reliability estimates expressed by correlation coefficients of the corresponding level.

Coding of actors is, practically, completely reliable because situations in which statements of the teacher and those of pupils could get confused appear very seldom.

Average estimate of reliability of move types is .86. Values for various move types are as follows:

STR	SOL_l	SOL_h	SOL_o	SOL_s	SOL_d	RES	REA
.77	.85	--[x]	.85	--[x]	--[x]	.94	.88

Reliability of cycles depends on the reliability of move types and cannot be counted in the same way as the reliability of categories. No values are therefore presented. It can, however, be assumed that, because cycles are objectively constructed on the basis of move types, cycles are very similar although recorded by different coders.

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[x] Owing to the small number of categories values could not be counted.

Reliability coefficients of the cognitive content are in average .71. Values for subcategories are as follows:

FAC	OPN	XPL	MAN	PER
.72	.71	.65	.76	--[x]

Reliability coefficients for the social-affective meanings are on an average .82. Values for subcategories are as follows:

1	2	3	4	5	6	7	8
.83	.69	.94	.92	.88	.80	.77	--[x]

Reliability of the mode of teacher influence was on an average .88. The same value was obtained for both subcategories.

As regards the reliability of attributing, no numeral values are available. This kind of reliability depends, moreover, fully on how well the pupils are known and how far they can be distinguished from each other in the recordings. Consequently, the reliability of attributing does not belong to the domain of the category system. On the basis of experience obtained from other systems it seems that an agreement of 90 pCt is attainable in a short time.

In general, reliability in using the DPA Helsinki taxonomy seems to be rather satisfying and as good as that of the other category systems on whose bases this taxonomy has been developed.

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[x] Owing to the small number of categories values could not be counted.

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UNIT	ACTOR	MOVE	CYCLE	COGNIT.	SOC. AFF	T. INFL.	ATTRIB	
1	T	STR	1	MAN		2	+x	THIS TIME WE'LL TALK ABOUT THE SCANDINAVIAN COUNTRIES
2	T	SOL;				2	+OS	COULD YOU TELL WHICH THEY ARE?
3	P	RES		FAC			OS+	SWEDEN, DENMARK, NORWAY, ICELAND AND FINLAND
4	T	REA			4	1	+OS	YES
5	T	STR	2	FAC		2	+x	SCANDINAVIA LIES ABOUT AS MUCH NORTH AS ALASKA, YET IT'S WARMER
6	T	SOL$_H$				2	+NE	COULD YOU SAY WHY?
7	P	RES		XPL			NE+	BECAUSE THE GULF STREAM BRINGS WARMTH FROM THE SOUTH
8	T	REA			1	1	+NE	VERY GOOD
9	T	SOL;	3			2	+UM	SHOW THE GULF STREAM ON YOUR MAP
10	T	SOL$_O$	4	MAN		2	+UM	HOLD THE MAP SO THAT EVERYBODY CAN SEE IT
11	P	RES	3	FAC			UM+	HERE
12	T	REA		FAC		1	+UM	OKAY, SO IT BEGINS AT THE EQUATOR....
13	T	SOL;	5			2	+PL	WHAT'S OUR WESTERN NEIGHBOUR?
14	P	RES		FAC			PL+	SWEDEN
15	T	REA			4	1	+PL	YES
16	P	STR	6	PER			HK+	I'VE BEEN IN NORWAY!
17	P	SOL$_D$					HK+	MAY I TELL ABOUT IT?
18	T	RES		MAN		1	+HK	YES, BUT LET'S DO THAT A LITTLE LATER
19	P	REA			3		HK+	OKAY

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